sugar-sirup are made in the neighborhood of Florence. The oranges imported into Leghorn, whether for consumption or for candying, are nearly all brought from the islands of Sicily, Sardinia, and Corsica. In all the countries contributing the raw fruit for this industry, it is treated in the same manner for the over-sea passage. The fruit is simply halved and placed in hogsheads or large casks filled with a fairly strong solution of brine, the fruit being halved merely to insure thorough preservation of the rind by an equal saturation of the interior as well as the exterior surface. In these casks it arrives at the doors of the manufactory. The first process to which it is then subjected is the separation of the fruit from the rind. This is done by women, who, seated round a large vessel, take out the fruit, skilfully gouge out the inside with a few rapid motions of the forefinger and thumb, and, throwing this aside, place the rind unbroken in a vessel alongside them. The rind is next carried to large casks filled with fresh cold water, in which it is immersed for between two and three days to rid it of the salt it has absorbed. When taken out of these casks, the rinds are boiled, with the double object of making them tender and of completely driving out any trace of salt that may still be left in them. For this purpose they are boiled in a large copper caldron for a time varying from one to two hours, according to the quality of the fruit and the number of days it has been immersed in brine. When removed from this caldron, the peel should be quite free from any flavor of salt, and at the same time be sufficiently soft to absorb the sugar readily from the sirup in which it is now ready to be immersed. The next process to which the rind is subjected is that of a slow absorption of sugar, and this occupies no less than eight days. The absorption of sugar by fresh fruit, in order to be thorough, must be slow, and not only slow but also gradual; that is to say, the fruit should be at first treated with a weak solution of sugar, which may then be gradually strengthened, for the power of absorption is one that grows by feeding. The fruit has now passed into the saturating-room, where on every side are to be seen long rows of immense earthenware vessels, about four feet high and two feet and a half in extreme diameter, in outline roughly resembling the famed Etruscan jar, but with a girth altogether out of proportion to their height, and with very short necks and large open mouths. All the vessels are filled to the brim with citron and orange peel in every stage of absorption; that is to say, steeped in sugar-sirup of about eight different degrees of strength. This process almost always occupies eight days, the sirup in each jar being changed every day; and with vessels of such great size and weight, holding at least half a ton of fruit and sirup, it is clearly easier to deal with the sirup than with the fruit. To take the fruit out of one solution and to place it into the next stronger, and so on throughout the series, would be a very tedious process, and one, moreover, injurious to the fruit. In each of these jars, therefore, there is fixed a wooden well, into which, a simple hand suction-pump being introduced, the sirup is pumped from each jar daily into the adjoining one. A slight fermentation next takes place in most of the jars; but this, so far from being harmful, is regarded as necessary, but is not allowed to go too far. There is yet another stage, and that perhaps the most important, through which the peel has to pass before it can be pronounced sufficiently saturated with sugar. It is now boiled in a still stronger sirup of a density of forty degrees by the testing-tube; and this is done in large copper vessels over a slow coke fire, care being taken to prevent the peel adhering to the side of the vessel by gently stirring with a long paddle-shaped ladle. This second boiling occupies about an hour. Taken off the fire, the vessels are carried to a large wooden trough, over which is a coarse open wire netting. The contents are poured over this, and the peel distributed over the surface of the netting, so that the sirup, now thickened to the consistency of treacle, may drain off the surface of the peel into the trough below. The peel has now taken up as much sugar as is necessary. Next comes the final process, — the true candying, or covering the surface of the peel with the layer of sugar-crystals which is seen on all candied fruits. To effect this, a quantity of crystallized sugar (at Leghorn the same quality of sugar is used as is employed in the preparation of the sirup) is dissolved in a little water; and in this the now dried peel, taken off the wire netting, is immersed. The same copper vessels are used, and a mixture is again boiled over a slow fire. A short boiling will suffice for this the last process; for the little water will quickly be driven off, and the sugar, upon cooling, will form its natural crystals over the surface of the fruit. Poured off from these vessels, it is again dried upon the surface of the wire netting, as before described. The candying is now complete, and the candied peel is ready for the packing-room, to which it is carried in shallow baskets. In the packing-room may be seen hundreds of boxes of oval shape and of different sizes, for each country prefers its boxes to be of a particular weight; Hamburg taking the largest (of 15 and 30 kilograms), the United States preferring smaller (of 10 and 12 kilograms), while England takes the smallest (of 5 kilograms), and one containing about 7 English pounds.

BOOK-REVIEWS.

Force and Energy. A Theory of Dynamics. By GRANT ALLEN. New York, Longmans. 8°. $2.25.

IN this work the author presents a new view of some of the concepts of physical science. The current views he holds to be erroneous, and, though he says that he puts forth his work with profound diffidence, it is evident that he feels great confidence in its correctness. The essential point in his theory is the distinction he draws between force and energy, both of which he includes under the term "power." Power he defines as "that which initiates or terminates, accelerates or retards, motion." He then goes on to divide power into two varieties, — force, or aggregative power; and energy, or separative power. Among forces he reckons gravitation, cohesion, and chemical affinity; and among energies, heat, muscular power in many cases, and, in short, whatever separates bodies or particles from one another. This theory he first states in an abstract form, and afterwards proceeds to an account of the various actual concrete forces and energies in the universe, mechanical, chemical, and vital, endeavoring to show that his views are not only consistent with the known facts and laws of physical science, but are essential to a correct understanding of them.

As to the merits of Mr. Allen's views, we shall not now enter on any elaborate criticism; but certainly his use of terms is not accordant with the common practice either of scientists or of writers generally. The term "power" has always been used in philosophy to denote causality viewed hypothetically; as when we say that fire has power to melt wax, meaning that it will melt wax if the two are brought into contact. Force, on the other hand, is commonly used to mean what Mr. Allen calls power; namely, any cause that in any way affects motion. The distinction Mr. Allen draws between separative and aggregative powers is of course a real distinction; and yet he himself finds it impossible to maintain it with perfect consistency. Thus, he calls the motion of a falling body and the contraction of a cooling body, energies, although they are obviously aggregative; and his attempt to remove the inconsistency does not seem successful. We commend the work, however, to the attention of our readers, as it is well written and with earnestness of purpose, and will doubtless be provocative of thought.

Life of Charles Blacker Vignoles. By his son, Rev. OLINTHUS J. VIGNOLES. New York, Longmans. 8°. $5.

THE subject of this memoir was one of the pioneers in railroad engineering, a work which in its early development required far more inventiveness and fertility of resource than is the case now; and his son has done well in laying an account of his life before the public. The book is well written, and with as much impartiality as could be expected in so near a relative of the hero. Vignoles was born in the last decade of the eighteenth century, and lived to the ripe age of eighty-two. He lost his parents in early life, and went to live with his maternal grandfather, with whom he afterwards had an irreconcilable quarrel. On reaching manhood, he entered the army, and by the aid of influential friends and his own merits rose in a few years to the position of lieutenant; but the conclusion of peace after Waterloo deprived him of the hope of further advancement, and he came over to America, and went to work as a civil engineer. He was employed in South Carolina and other Southern States, and by his experience there prepared himself for the more difficult work of railroad engineering, in which